Does Market Power Breed Inefficiency? Evidence from Firm-Level Inventory Dynamics*

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Abstract

This paper investigates whether market power induces internal inefficiency in firms, focusing on inventory turnover as a key indicator of operational discipline. Using a comprehensive panel of U.S. non-financial public firms, we document a robust negative relationship between firm-level markups and inventory turnover: firms with greater pricing power tend to hold inventory longer, consistent with a slack or X-inefficiency mechanism. This relationship holds after controlling for firm size, industry, year, and capital intensity. Importantly, we find that the negative association between markups and inventory turnover is significantly stronger in firms with weaker governance structures and lower managerial capacity, suggesting that internal organizational frictions amplify the effect of market power on operational slack. This is consistent with a moral hazard channel in which reduced external pressure and poor oversight weaken managerial effort toward operational efficiency. These results provide novel evidence for a firm-level inefficiency channel through which market power distorts resource use. By linking pricing power to internal performance, the paper contributes to a growing literature on the welfare implications of rising markups, adding an operational dimension to traditional concerns about allocative inefficiency and market concentration. They also challenge the view that high markups are universally reflective of superior performance, revealing that for many firms, market power may breed slack rather than efficiency.

Keywords: Market power, Markups, Operational efficiency, Inventory turnover, X-inefficiency, Managerial slack, moral hazard, Superstar firms, Welfare
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1 Introduction

Why do firms, even those with ample resources, fail to operate efficiently? One can then introduce rising market power as a potential, and underexplored, answer to this question. This flips the narrative from "here's a macro trend, let's see how it affects operations" to "here's an operations puzzle, let's use a macro trend to help solve it."

Over the past decades, U.S. firms have experienced a striking and persistent rise in markups, prices charged over marginal cost, prompting renewed scholarly and policy interest in the consequences of market power for firm behavior and economic welfare (De Loecker et al., 2020a; Baqaee and Farhi, 2020) . These markups are often interpreted as indicators of market power, and their increase is viewed as a reflection of declining competition and rising firm dominance (Hall, 2018). Markup heterogeneity is not just a distributional or pricing issue; it is a production-side distortion with real consequences for economic performance and welfare (Edmond et al., 2015; Edmond, 2022). While much of the attention has focused on allocative inefficiency, how market power distorts consumption and production across firms, less is known about how elevated markups may shape firms' internal operational choices, particularly those related to efficiency, slack, and managerial discipline. When high-markup firms face weak competitive pressure, they not only distort allocative efficiency across firms but may also lose the incentive to optimize internal production and operational processes. This paper provides new evidence on this underexplored mechanism by examining the relationship between firm-level markups and inventory turnover, a canonical measure of operational efficiency.

The U.S. economy has experienced two striking trends in recent decades: a marked slowdown in productivity growth and a sharp rise in firm-level markups. While aggregate output per worker has grown more slowly since the early 2000s, firms have simultaneously enjoyed record profitability, increased concentration, and greater pricing power (Autor et al., 2020; De Loecker et al., 2020a). When considering whether higher profitabil-

ity and market dominance reflect genuine operational efficiency, Clougherty and Skousen (2021) empirically seperates efficiency gains from market power-enhanced slack, finding that these phenomena have different implications for firm welfare and productivity. For instance, studies by Blonigen and Pierce (2016) document that increases in market power following mergers often do not coincide with productivity improvements, highlighting the challenge of disentangling true operational efficiency from pricing power. Similarly, Jangili (2020) find that in emerging markets, high profitability frequently stems more from market power than from enhanced resource management.This puzzle - why productivity stagnates even as firms appear more profitable and dominant - has sparked intense debate across macroeconomics, industrial organization, and management research.

One line of work emphasizes macro-level bottlenecks and misallocation. Acemoglu, Autor and Patterson (2024), for example, argue that sectoral imbalances, particularly in inputs such as energy, construction, and supply chain capacity, have constrained aggregate productivity. Their analysis highlights how frictions in the reallocation of resources across sectors can reduce growth, even if individual sectors innovate. Similarly, Edmond (2022) show that rising markups at the aggregate level can distort labor allocation and suppress welfare. These perspectives illuminate important economy-wide channels but leave open a critical question: to what extent does rising market power affect productivity not only through allocative distortions across firms or sectors, but also through productive inefficiencies within firms themselves?

At the heart of our investigation lies a fundamental question: Does greater market power diminish a firm's incentive to operate efficiently? At first glance, one might expect firms with higher markups to also be more operationally efficient, since they often have more resources, access to better technology, and face greater investor scrutiny. However, this is not necessarily *ex ante* obvious. By contrast, firms with substantial pricing power may tolerate, or even strategically adopt operational slack, such as holding excess inven-

tory beyond what is strictly necessary. Modi and Mishra (2011) compare the impacts of resource efficiency and resource slack on financial performance, finding that efficiency, as measured through inventory practices, is more strongly associated with positive outcomes when competitive pressures are intense and slack is minimized. This underscores the importance of benchmarking operational performance in relation to both internal and external firm characteristics. For example, Hendricks et al. (2009) demonstrate the operational slack, characterized by excess inventory and underutilized capacitycan buffer firms against environmental shocks but often leads to diminished efficiency when external discipline is lacking. Similarly, Bogetoft et al. (2024) distinguish between useful slack, which is strategically justified, and wasteful slack, which is costly and inefficent, using a rational economic model to show how slack consumption varies as function of market structure .Such slack can serve multiple purposes, including hedging against uncertainties or reducing coordination costs, especially when the marginal cost of inefficiency is relatively low. In this respect, inventory turnover provides a revealing operational lens through which to examine how market power shapes internal firm discipline and resource allocation.

The concept of "strategic slack" has traditionally been explored primarily as a feature of internal firm design. However, emerging research highlights that strategic slack is heavily influenced by external market structure and competitive dynamics. Classic organizational theories portray slack as excess resources buffering firms against internal uncertainties (Cyert and March, 2015). More recent studies emphasize that the level of slack a firm holds and how it is managed depend critically on the intensity of external competition and market threats (Bourgeois, 1981; George, 2005). Firms operating in concentrated or less contestable markets often maintain higher slack since competitive discipline is muted, while firms in competitive environments are compelled to keep slack low to survive.Golan et al. (2011) provide a theoretical framework connecting managerial slack directly to the product market competition , proposing that greater competition

leads to incread manager effort and reduced slack. The notion is supported by Ichniowski et al. (1995), whose empirical analysis of steel finishing lines reveals that human resource management practices and competitive forces jointly drive productivity improvements The notion is supported by This growing recognition situates operational slack as an endogenous strategic choice shaped by the external environment rather than solely internal capabilities.

Formal theoretical frameworks demonstrate that operational decisions, including choices about efficiency and slack, could be endogenous outcomes of market structure. The literature emphasizes that equilibrium firm efficiency may vary systematically with market competitiveness and industry characteristics (Martin, 1993; Krishna, 2001).

This broadened understanding carries important implications for theories of the firm. Internal organizational practices such as slack accumulation and operational efficiency are no longer seen as purely endogenous phenomena bounded within firm-level routines but as strategic responses to external market conditions. Notably, resource-based and dynamic capabilities perspectives recognize slack as a form of strategic flexibility or option value, deployed in environments where competitive discipline permits inefficiency (Edmond et al., 2015; Boar and Midrigan, 2024; Teece, 2009; Zhang et al., 2025; Jiao et al., 2022). The theory hub review also affirms that resource-based approaches are invaluable for understanding how competitive discipline modulates a firm's operational strategy regarding slack resources.This reframing deepens our understanding of firm behavior, emphasizing that slack, efficiency, and processes exist within a broader ecosystem shaped by market power and competitive dynamics.

Beyond firm strategy, this question speaks directly to the broader welfare implications of rising markups. A growing body of work argues that increased market power contributes to macroeconomic distortions via misallocation and depressed productivity growth (Edmond, 2022; Baqaee and Farhi, 2020; De Loecker et al., 2020a). Our study adds

a novel micro-foundational channel to this literature: even if markups improve allocative efficiency at the firm level (e.g., via innovation rents or quality differentiation), they may simultaneously induce operational slack that leads to deadweight losses. In this light, our evidence provides empirical support for the classic X-inefficiency hypothesis (Leibenstein, 1966), updated for a contemporary context in which firms with pricing power optimize under weaker competitive discipline.

We test our question on the U.S. Compustat non-financial firms. We use inventory turnover ratio as the proxy for operational efficiency (Gaur, Fisher and Raman, 2005). The main identification challenge is disentangling the association between market power and operational efficiency from confounding factors that affect both variables. Firms with high markups may differ systematically from other firms in ways that are difficult to observe or measure, e.g., technology, managerial quality, or industry position. This could simultaneously affect both their pricing power and inventory management practices. Additionally, inventory turnover is typically persistent, and markups may themselves respond to firm strategies, increasing the risk of endogeneity and confounded estimates.

To address endogeneity concerns, we draw on a dynamic panel framework. Our identification strategy closely mimics (Acemoglu, Hassan and Tahbaz-Salehi, 2020), who emphasize the importance of accounting for firm-specific dynamics and persistence in performance outcomes. In our context, inventory turnover may not adjust instantaneously to changes in markups. Therefore, we employ a dynamic panel design, controlling for firm fixed effects and lagged dependent variables, to better isolate the causal effect of markup changes on operational efficiency.

The results provide robust and quantitatively important evidence that increases in markup are associated with measurable reductions in operational efficiency, as captured by inventory turnover. Across all model specifications, including OLS (Table 1, Column 1), static panel data estimators (Table 1, Column 2), and dynamic panel models with lagged

dependent variables (Table 1, Column 3) that control for unobservable firm heterogeneity and persistent behaviors. In our preferred estimate, we find that a 1% rise in markup leads to approximately a 0.7% drop in inventory turnover ratio. This negative relationship remains economically important and statistically significant when controlling for firm and year fixed effects, firm size, industry characteristics, capital intensity, and other confounders. The baseline robustness is further confirmed in Table 2, which presents alternative samples and specifications, collectively showing consistent negative coefficients across models.

We interpret these findings through the lens of both classic X-inefficiency theory (Leibenstein, 1966) and modern moral hazard in organizations (Willig, 1987; Bolton and Scharfstein, 1988; Grossman and Hart, 1992). In the absence of tight monitoring or high-powered incentives, managers may rationally choose to exert less effort in optimizing operations (e.g., inventory turnover), especially when such effort is costly or risky. In competitive environments, managers are subject to continuous external discipline through pricing pressure and market share contests. This discipline compels managers to optimize cost structures, maintain operational efficiency, and minimize slack. However, when firms gain pricing power, i.e., the ability to charge markups above marginal cost, this external pressure is relaxed. The firm's financial performance becomes less sensitive to internal inefficiencies, which in turn weakens the link between managerial effort and outcomes. When markups are high and profits are cushioned, managers may prioritize ease of execution, organizational comfort, or local risk-hedging over efficiency. The problem is likely to be more acute in firms with weak corporate governance, where boards are less effective in aligning managerial behavior with shareholder value.

To shed light on the channels linking market power to operational outcomes, we examine the moderating role of corporate governance. Under the managerial slack interpretation, weaker governance should amplify the adverse effect of markups on inventory

turnover by reducing oversight and increasing agency frictions.

To learn the underlying mechanism, we explore cross-sectional heterogeneity based on firm governance characteristics. Importantly, we document substantial heterogeneity in this relationship based on corporate governance structures and supply-side frictions. Firms where independent board members are more co-opted by management, proxied by a higher fraction of independent directors appointed after the CEO - exhibit a significantly stronger negative relationship between markups and inventory turnover. This suggests that the insulating effect of market power is exacerbated in environments with reduced board independence, allowing managerial slack to persist. However, this effect attenuates or even reverses in firms with a broader supplier base, where a wider sourcing network appears to impose external discipline and limit the extent of operational slack despite high markups.This moral hazard explanation aligns with our empirical findings: the negative relationship between markup and inventory turnover is stronger in firms with weaker governance and lower managerial capacity, suggesting that market power exacerbates agency frictions inside firms.

These findings suggest a novel and potentially powerful "operational inefficiency channel" of markup distortions, a mechanism largely missing in existing discussions of market power's real effects. Standard operations management theories emphasize the centrality of lean processes, inventory control, and throughput efficiency as sources of value creation under competitive pressure (Fisher, 1997; Gaur et al., 2005). Yet these theories often take market structure as exogenous. Our findings challenge this view by showing that when firms have sufficient pricing power, the need to optimize internal operations weakens.

Taken together, these extensive analyses illustrate a robust, quantitatively significant, and policy-relevant channel linking market power to reduced operational efficiency within firms.

For managers, these insights offer a caution that attaining market dominance may in-

advertently reduce operational discipline, underscoring the importance of strong internal controls and incentive alignment. For policymakers, this work suggests incorporating internal efficiency metrics like inventory turnover in market power assessments, to more comprehensively capture welfare costs. Firms that relax inventory discipline in the presence of markups may inadvertently reduce responsiveness, increase working capital burdens, and erode long-run competitiveness. Our findings underscore the need for high-powered internal performance incentives, particularly in less competitive environments where external pressure is muted. From a policy perspective, the results expand the scope of concern around rising markups. While antitrust debates often focus on consumer harm and allocative inefficiency, our findings highlight an internal operational inefficiency channel - a form of hidden slack that can waste capital and reduce aggregate productivity. These insights suggest that regulatory scrutiny of market power should also consider how pricing power affects firms' internal functioning and dynamic efficiency.

2 Related Literature

This paper contributes to several strands of literature at the intersection of industrial organization, firm behavior, and operations management. A central contribution is to the growing literature on the real effects of market power. While prior work has documented a sharp rise in markups across U.S. firms and linked this trend to declining competition, misallocation, and sluggish productivity growth (Baqaee and Farhi, 2020; De Loecker et al., 2020a; Gutiérrez and Philippon, 2019; Syverson, 2019), less is known about how market power influences internal firm choices beyond pricing and scale.Recent sectoral and industry-level studies provide updated evidence on how rising market power alters operational performance both within and across industries(Miller, 2025; Jangili, 2020). Building on this, recent empirical and theoretical work has begun to explore behavioral and

organizational responses to changes in competitive pressure(Syverson, 2019; Crouzet and Eberly, 2022; Azar et al., 2022; Chen et al., 2023).However, despite this emerging literature, detailed evidence on the operational consequences of market power remains scarce. Our results demonstrate that elevated markups are systematically associated with lower inventory turnover, highlighting an internal efficiency cost of market power that is often overlooked. Contemporary studies in both developed and emerging markets have reinforced the connection between inventory practices and overall profitability, and traced how turnover reflects the internal efficiency of modern firms (Onah and Okwo, 2024). This finding complements existing research emphasizing inter-firm distortions by revealing within-firm operational distortions linked to pricing power. By doing so, we also extend the literature on markups and welfare (De Loecker et al., 2020a; Acemoglu et al., 2024) by identifying a within-firm inefficiency channel through which market power reduces productivity. Whereas most studies emphasize allocative distortions across firms or sectors, we show that high markups can also undermine efficiency inside firms by weakening performance incentives.

Our findings intersect with operations management research, where inventory turnover and process optimization are seen as key drivers of firm performance (Fisher, 1997; Gaur et al., 2005; Hu et al., 2010). However, these studies often treat market structure as exogenous. Recent work has emphasized the strategic nature of operational slack and process inefficiencies (Chen et al., 2022; Cachon and Olivares, 2010), particularly in industries experiencing consolidation, digital transformation, or supply chain disruptions (Chan et al., 2023; Li et al., 2025). By linking markups to operational slack, we highlight the endogeneity of internal firm choices to external competitive conditions, offering a mechanism through which macro-level market dynamics shape micro-level process efficiency and resilience.

Our paper speaks to the corporate governance literature ants interaction with the op-

erationa management. A key contribution of this paper lies in its exploration of the corporate governance and managerial mechanisms that mediate the relationship between market power and operational efficiency. We provide novel evidence that the negative effect of markups on inventory turnover is significantly amplified in firms with weaker governance structures, as proxied by board co-option (Coles et al., 2024, 2014), strong managerial incentives, such as those related to CEO pay sensitivity to the stock price (Coles et al., 2006; Core and Guay, 2002). This suggests that the operational slack we observe is not merely a passive outcome of reduced competitive pressure but is actively shaped by internal organizational frictions. Recent empirical research shows that board independence and diversity significantly moderate the relationship between market power and operational slack, further suggesting governance structure is key to sustaining performance discipline under competitive pressures (Ayamga, 2024). Our results advance the literature by demonstrating that the moral hazard channel—where a lack of external discipline weakens internal oversight—is a crucial mechanism through which market power erodes operational performance. Broadly, by linking these internal governance factors to a firm's operational discipline, we offer a more nuanced understanding of the welfare implications of rising market power, highlighting the role of management and governance in both fostering and hindering efficiency.

The paper also revisits and extends the classic concept of X-inefficiency (Leibenstein, 1966), which posits that in the absence of competitive pressure, firms may underperform relative to their potential due to slack or lack of discipline. While the idea of X-inefficiency has long influenced economic thought, empirical validation using modern large-scale datasets has been limited. Recent theoretical advances stress how managerial incentives, organizational rigidity, and market structure jointly shape organizational efficiency (Aghion et al., 2023; Thwaites et al., 2021). By showing that firms with greater market power are less operationally disciplined reflected in slower inventory turnover,

we offer contemporary empirical support for the X-inefficiency hypothesis using granular firm-level data, while connecting to literature exploring how digitalization and remote work influence internal performance monitoring (Lehmann and Beckmann, 2025).

In addition, we speak to the literature on allocative efficiency and misallocation. A large body of research focuses on how market power distorts resource allocation across firms, reducing aggregate productivity (Rogerson and Restuccia, 2004; Hsieh and Klenow, 2009; Bartelsman et al., 2023; Metcalfe et al., 2023; Acemoglu et al., 2024).We add a novel layer by showing that market power can also distort the internal allocation of resources within firms. New work in the financial sector extends this view, demonstrating that market power not only shifts external allocations but also reshapes operational and credit policies inside dominant firms (Camino-Mogro et al., 2025). This builds on recent insights emphasizing intra-firm frictions and organizational misallocation as important drivers of overall efficiency losses (García-Macia and Roussanov, 2021; Bonfiglioli et al., 2025; Bloom et al., 2022). Inefficiency thus arises not only because inputs are allocated across firms in suboptimal ways, but also because dominant firms underutilize their own resources due to weaker performance pressures and internal slack.

Finally, the paper contributes to ongoing debates about the measurement of market power and the broader welfare implications of rising markups. If high-markup firms tolerate inefficiencies in their operations, standard measures that focus solely on pricing and profit margins may underestimate the true social cost of market power. Our findings echo recent calls (De Loecker et al., 2020b; Brynjolfsson et al., 2017) for more holistic metrics that capture organizational behavior and internal resource use. We suggest that operational metrics such as inventory turnover and efficiency-adjusted markups should be more prominently considered in assessing the full scope of firm behavior under imperfect competition, complementing approaches that integrate firm heterogeneity in performance measurement (Goolsbee and Syverson, 2023; Azar et al., 2022).

3 Data and Empirical Strategy

This study primarily utilizes firm-level fundamentals and governance data obtained from the Compustat and ExecuComp databases, accessed via the Wharton Research Data Services (WRDS) platform. Compustat provides comprehensive annual firm fundamentals for publicly listed U.S. companies, including standardized accounting variables such as income statements, balance sheets, and cash flow components that form the empirical backbone of our analysis. ExecuComp offers detailed executive compensation and ownership data, which are essential for constructing precise governance measures. The integration of these datasets enables a thorough examination of firm performance and internal governance dynamics.

To estimate firm-level market power, we compute markups using estimates derived from production function approaches that relate firm input usage and output to infer the wedge between price and marginal cost. Specifically, we follow the methodology developed by De Loecker, Eeckhout and Unger (2020b), which offers a rigorous framework for calculating firm-level markups using observable firm characteristics. This approach exploits input demand conditions from the firm's optimization problem, estimating the output elasticity of a variable input—typically intermediate inputs or materials—and comparing it to that input's share in revenue. The markup is then defined as the ratio of output elasticity to input expenditure share, capturing the extent to which firms price above marginal cost due to market power. This method addresses key challenges such as unobserved productivity and input price heterogeneity through a two-stage estimation procedure, allowing for consistent markup measurement at the firm-year level.

The analysis incorporates key governance variables capturing board composition and executive incentives with precision. Board co-option is measured as the fraction of directors appointed after the CEO assumed office (*Co-option*), defined as the ratio of such "co-opted" directors to total board size. To reflect the increasing influence of directors

over time, a tenure-weighted co-option measure (*TW Co-option*) is computed by dividing the sum of tenure of co-opted directors by the total tenure of all directors on the board. Additionally, to differentiate monitoring effectiveness more precisely, the fraction of independent directors appointed after the CEO's accession (*Co-opted Independence*) and the fraction of independent directors appointed before the CEO's tenure (*Non-Co-opted Independence*) are included as key variables, reflecting board loyalty and true independence respectively, following the conceptual framework of Coles et al. (2006).

For executive incentives, the dataset includes **delta** and **vega** metrics sourced from ExecuComp, standard measures of CEO risk-taking and pay-performance sensitivity. Delta represents the expected dollar change in the CEO's wealth for a 1% increase in the firm's stock price, capturing the alignment between CEO incentives and shareholder value. Vega captures the dollar sensitivity of CEO wealth to a 0.01 change in stock return volatility, reflecting incentives to undertake riskier strategies. Both metrics are calculated using firm-specific stock and option portfolio data and the Black-Scholes option pricing model, following established methods (Core and Guay, 2002; Coles et al., 2006). CEO ownership percentage is measured as the CEO's stock holdings divided by the total shares outstanding, reflecting economic stakes and governance influence.

The dataset further integrates operational inputs by incorporating the number of suppliers associated with each firm, derived from FactSet's supply chain relationships data. Specifically, the number of suppliers for each source company is calculated by counting the unique target companies identified as suppliers within FactSet's supplier-customer linkage framework. To merge this information with market power and operational measures, the supplier data were aligned at the firm-year level using unique CUSIP identifiers to match with the markup and inventory turnover dataset. CUSIP, a widely used standardized security identifier, facilitates precise and consistent linkage of data across multiple financial and operational databases. Together, these integrated measures of op-

erational complexity, market power, and governance enable a comprehensive empirical assessment of how internal governance and executive incentives jointly influence firm-level operational efficiency and outcomes.

3.1 Empirical Strategy

Our study investigates whether firms with greater market power, proxied by firm-level markups Markup_{it}, exhibit operational inefficiencies as reflected by lower inventory turnover ratios ($\text{Inventory Turnover}_{it}$). In competitive markets with thin margins, firms face strong incentives to minimize waste and optimize internal processes such as inventory management. In contrast, firms with pricing power may experience weaker external discipline, enabling them to tolerate—or strategically adopt—operational slack. This aligns with Leibenstein (1966) theory of X-inefficiency, where slack becomes a stable equilibrium under diminished competitive pressure. Our contribution lies in identifying this production-side distortion as an endogenous outcome of market power, linking industrial organization, corporate governance, and operations management.

We draw on a panel of publicly traded U.S. firms from Compustat, enriched with governance data from ExecuComp, to capture both cross-sectional and temporal variation in market power and internal discipline. Firm-level markups are estimated following the production-function-based approach of De Loecker et al. (2020a) using both static and rolling definitions to capture persistent and time-varying pricing power.

Our empirical analysis examines the relationship between market power and operational efficiency by estimating the impact of firm-level markups on inventory management practices. Following the production function–based markup estimation framework developed by De Ridder et al. (2024), we consider two complementary specifications that differ with respect to the markup variable employed: a *static specification* based on contemporaneous markups and a *dynamic specification* based on rolling-window markups.

Operational efficiency is captured by the inventory turnover ratio, defined as:

$$\text{Inventory Turnover}_{it} = \frac{\text{COGS}_{it}}{\text{Average Inventory}_{it}}, \tag{1}$$

where COGS_{it} denotes the cost of goods sold by firm i at time t, and $\text{Average Inventory}_{it}$ is the mean of beginning- and end-of-period inventory levels.

The static specification relies on contemporaneous firm-level markups, estimated directly from the production function approach. The *static markup* is defined as:

$$\text{Markup}_{it} = \frac{\theta_{jt}^{X}}{\alpha_{it}^{X}},$$

where α_{it}^{X} is the output elasticity with respect to input X and θ_{jt}^{X} denotes the corresponding expenditure share at industry j and time t. This markup measure reflects the pricing power exercised by firm i in period t without accounting for temporal smoothing.

The econometric model is given by:

$$Y_{it} = \alpha_i + \delta_t + \beta \, \ln(\text{Markup}_{it}) + \epsilon_{it}, \tag{2}$$

where α_i captures firm fixed effects and δ_t controls for time (or sector-year) shocks. Here, Y_{it} denotes inventory turnover (equation 1), and β quantifies the effect of market power on operational efficiency.

To account for medium-run dynamics, we also introduce a *rolling-window markup measure*. For each firm i, the rolling markup is defined as:

$$\text{Markup}_{it}^{roll} = \frac{1}{L} \sum_{\ell=0}^{L-1} \text{Markup}_{i,t-\ell},$$

where $L = 7$ corresponds to a seven-year window. This construction smooths year-to-year fluctuations in firm-level markups and captures persistent pricing power trends.

The dynamic model incorporates both rolling markups and persistence in inventory turnover:

$$Y_{it} = \alpha_i + \delta_t + \beta \ln(\text{Markup}_{it}^{roll}) + \rho Y_{i,t-1} + \epsilon_{it}, \tag{3}$$

where ρ measures the degree of persistence in inventory turnover behavior.

3.2 Identification

A key challenge in identifying the effect of market power on inventory turnover is that omitted variables (e.g., managerial skill, firm strategy) and the natural persistence of inventory policy can bias standard estimates. A firm's ability to command high markups and its inventory strategy are likely co-determined by such latent factors. To be specific, the key econometric challenges in consistently estimating β are threefold.

First, the inclusion of the lagged dependent variable, $\log(\text{Turnover})_{it-1}$, is crucial as inventory policies are highly persistent. However, its presence creates a mechanical correlation between the regressor and the error term in any model that relies on within-firm transformations to eliminate the fixed effect, α_i. For instance, in a standard fixed-effects (FE) estimator, the de-meaned lagged dependent variable is correlated with the de-meaned error term, leading to a biased estimate of ρ, which in turn biases all other coefficients, including our parameter of interest, β (Nickell, 1981).

Second, the primary threat is that α_i is likely correlated with our measure of market power. Firms with superior management, stronger brand equity, or more efficient production technologies may simultaneously achieve higher markups and leaner inventory systems. Because α_i is unobservable, failure to properly account for it will lead to a biased estimate of β. While an FE estimator would difference out α_i, it would still suffer from the Nickell bias described above.

Third, markups themselves are not strictly exogenous. Shocks to a firm's operational

efficiency (ε_{it}) could contemporaneously affect its market position and pricing decisions. Furthermore, our markup measure is an estimate derived from a production function estimation, introducing potential measurement error which can attenuate the coefficient towards zero.

To address this, we use a dynamic panel GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). This approach tackles the identification challenge in two ways. First, it accounts for the persistence in inventory management by modeling current turnover as a function of past turnover. Second, it uses lagged variables as internal instruments to control for the endogeneity of both the lagged dependent variable and our market power measure. This method simultaneously addresses bias from unobserved time-invariant firm characteristics and simultaneity, providing a more robust estimate of the relationship between market power and operational efficiency. This estimator is specifically designed for dynamic panel models with "small T, large N," internal instruments, and potential endogeneity of regressors. The System GMM estimator proceeds by creating a system of two equations: one in first-differences and one in levels.

First, to eliminate the firm fixed effect α_i, Equation 2 is first-differenced:

$$\Delta \log(\text{Turnover})_{it} = \gamma \Delta \log(\text{Turnover})_{it-1} + \beta \Delta \log(\text{Markup})_{it} + \Delta \mathbf{X}'_{\mathbf{it}} \delta + \Delta \eta_t + \Delta \varepsilon_{it} \quad (4)$$

In this transformed equation, the endogeneity of $\Delta \log(\text{Turnover})_{it-1}$ with $\Delta \varepsilon_{it}$ persists. The insight of Arellano and Bond (1991) is to use suitably lagged *levels* of the variables as instruments. Assuming that the idiosyncratic errors ε_{it} are serially uncorrelated, then $\log(\text{Turnover})_{it-2}$ is correlated with $\Delta \log(\text{Turnover})_{it-1}$ but uncorrelated with $\Delta \varepsilon_{it}$. This allows for the use of moment conditions of the form $E[\log(\text{Turnover})_{it-s} \cdot \Delta \varepsilon_{it}] = 0$ for $s \geq 2$. We treat our markup variable and other controls in $\mathbf{X}'_{\mathbf{it}}$ as endogenous and instrument them similarly using lagged levels.

However, when variables are highly persistent, as is the case with inventory turnover

and potentially markups, their lagged levels are weak instruments for their subsequent first-differences. This weak instrument problem can lead to biased and imprecise estimates Blundell and Bond (1998). The System GMM estimator mitigates this by augmenting the difference equation (4) with the original equation in *levels* (2).

In the levels equation, the instruments used are the lagged *first-differences* of the variables. This relies on an additional assumption that the first-differences of the instrumenting variables are uncorrelated with the firm-specific fixed effects, i.e., $E[\Delta \log(\text{Turnover})_{it-1} \cdot (\alpha_i + \varepsilon_{it})] = 0$. This assumption implies that the deviation of a variable from its initial value is not predictive of the firm's permanent unobserved characteristics, a condition often plausible in practice. This provides a second set of moment conditions, which are particularly informative when the series is persistent.

The validity of our instrument set is assessed using two crucial specification tests. First, the Sargan-Hansen test of overidentifying restrictions tests the null hypothesis of the joint validity of the instruments. A failure to reject the null provides confidence in our instrument choice. Second, we use the **Arellano-Bond test for autocorrelation** in the differenced residuals. The GMM estimator is only consistent if the original errors, ε_{it}, are serially uncorrelated. This implies that we should observe significant first-order autocorrelation (AR(1)) in the differenced residuals, $\Delta\varepsilon_{it}$, but, critically, no evidence of second-order autocorrelation (AR(2)). The absence of AR(2) supports the exogeneity of instruments lagged two or more periods. In our implementation, we use a two-step GMM estimator with Windmeijer (2005) corrected standard errors to address the downward bias in standard errors inherent in two-step estimation. We also limit the instrument count to avoid overfitting the endogenous variables, which can weaken the power of the Hansen test.

4 Results

4.1 Main Results

When studying a firm's operating efficiency, it is important to understand how changes in markup—reflecting the firm's pricing power relative to costs—affect performance over time. Markup measures help capture the extent to which firms can set prices above marginal costs, which in turn relates to profitability and market power.

In this context, static markups provide a fixed estimate of pricing power, assuming it remains constant throughout the period analyzed. This approach is useful for comparing firms at a given point or averaging behavior over time but may miss important fluctuations. By contrast, rolling markups allow markup estimates to vary across time, capturing how firms adjust prices in response to changing market conditions, competition, or cost structures. This dynamic perspective offers deeper insights into the evolution of operating efficiency and competitive behavior.

This distinction between static and rolling markups is particularly salient in analyzing the relationship between pricing power and inventory efficiency. Economic theory and previous empirical studies suggest that firms with higher markups—indicative of greater market power—face less pressure to accelerate inventory rotation, since they can sustain higher prices with less fear of customer attrition (Bils and Klenow, 1998; Chen et al., 2005). Conversely, competitively constrained firms with lower markups are compelled to maintain higher turnover to preserve margins. Our regression evidence, presented in Table 1, confirms this pattern across empirical specifications.

The OLS and static panel fixed-effects models leverage static, contemporaneous markups, while the dynamic panel results utilize the rolling (seven-year average) markup measure, which captures medium-term pricing power fluctuations. Across all models, the coefficient on $\log(\text{Markup})$ is negative and highly significant, indicating a robust inverse link

between firm-level markups and inventory turnover rates.

Table 1: Regression Results on Markup and Inventory Turnover

	Log(Inventory Turnover)		
	OLS	Static Panel	Dynamic Panel
Log(Markup)	-0.744***	-0.935***	-0.664***
	(0.009)	(0.008)	(0.021)
Lagged Inventory Turnover			0.081***
			(0.007)
Constant	2.698***	2.871***	2.409***
	(0.008)	(0.008)	(0.027)
Observations	198,249	198,249	163,975
R-squared	0.033	0.034	-

Notes: This table shows regressions of log inventory turnover on log markup, which is used as a proxy for firm market power. Column (1) presents ordinary least squares estimates. Column (2) uses a static panel model with firm fixed effects. Column (3) uses a dynamic panel specification and includes a lag of the dependent variable to capture adjustment dynamics. Standard errors, shown in parentheses, are clustered at the firm level. The negative and statistically significant coefficients on log markup indicate that firms with higher market power tend to have lower inventory turnover.

Notably, a 1% increase in markup is associated with an approximate 0.74% reduction in inventory turnover in the OLS model, a 0.94% reduction in the static panel, and a 0.66% reduction in the dynamic (rolling) panel. These estimates underscore a substantial relationship: stronger market power systematically reduces the speed of inventory movement. In the dynamic specification, the lagged dependent variable enters positively and significantly, reflecting strong persistence in inventory management practices.

4.2 Heterogeneity

The baseline regression results reported in Table 2 provide compelling empirical evidence supporting the hypothesis that firms with greater market power—as proxied by the natural logarithm of markup—tend to exhibit lower operational efficiency as measured by

inventory turnover. Across all model specifications, the coefficient on $\log(\text{Markup})$ is negative and statistically significant at the 1% level, indicating a robust inverse relationship between markup and inventory turnover.

Table 2: Baseline Results: Inventory Turnover and Markups

	(1)	(2)	(3)	(4)
	Dependent variable: log(Inventory Turnover)			
log(Markup)	-0.328	-1.947^{***}	-1.132^{***}	-0.743^{***}
	(0.348)	(0.220)	(0.141)	(0.110)
Constant	2.581^{***}	3.538^{***}	2.969^{***}	2.776^{***}
	(0.254)	(0.181)	(0.129)	(0.150)
Observations	50,351	53,910	50,909	43,073

Notes: The dependent variable is the natural logarithm of the inventory turnover ratio, defined as the ratio of cost of goods sold to average inventory for a given firm-year. The primary independent variable, $\log(\text{Markup})$, represents the natural logarithm of firm-level markup, which is estimated using a production-function approach as described in the main text. All regressions control for year and firm effects. Standard errors (reported in parentheses) are clustered at the industry level. Statistical significance is denoted by * for $p < 0.10$, ** for $p < 0.05$, and *** for $p < 0.01$.

The estimated effects vary in magnitude from approximately -0.33 to -1.95, suggesting that a 1% increase in markup is associated with a decline in inventory turnover between 0.3% and nearly 2%, depending on the inclusion of controls and sample composition. These findings align with the theoretical framework in which firms with substantial pricing power face weakened competitive pressures, which may relax incentives for operational discipline and thereby engender greater internal slack, such as elevated inventory holdings.

All models incorporate firm and year fixed effects to control for unobserved heterogeneity and temporal shocks, while standard errors are clustered at the firm level to account for within-firm correlation over time. This robust negative relationship underscores an important micro-level channel through which rising market power distorts not only pricing but also firms' internal operational choices, with potential welfare implications extending beyond traditional allocative inefficiency narratives.

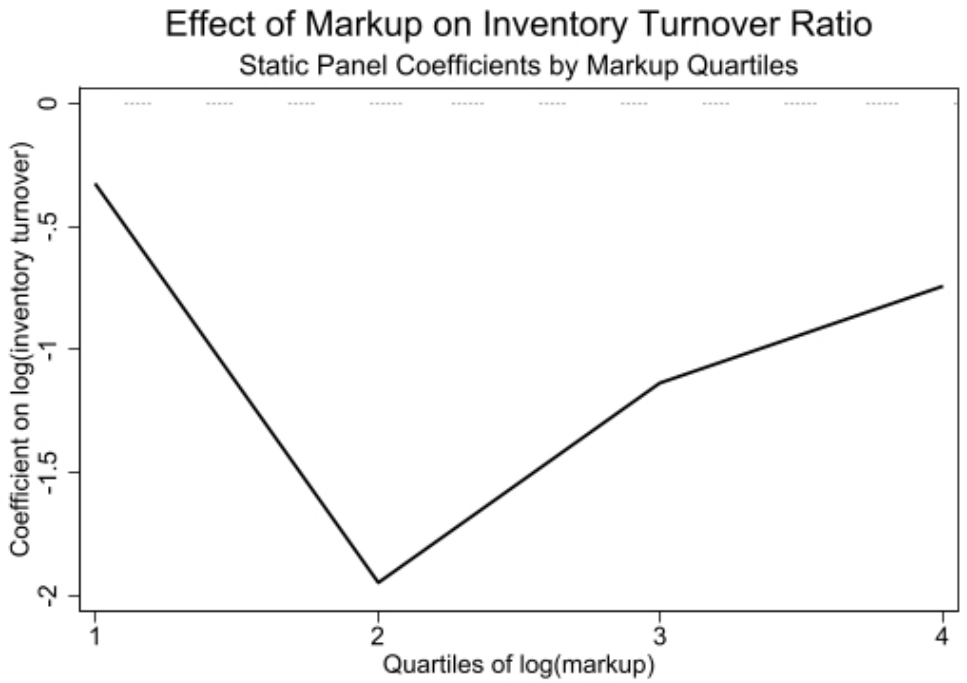

Figure 1: Effect of Markup on Inventory Turnover Ratio

Notes: The dependent variable is the natural logarithm of the inventory turnover ratio, defined as the ratio of cost of goods sold to average inventory. The main independent variable is the natural logarithm of firm-level markup (estimated using the appropriate method). All regressions include firm and year fixed effects, and standard errors are clustered at the firm level.

Taken together, these baseline results reinforce and extend the findings from Table 1, highlighting that the path from pricing power to operational efficiency is both substantive and persistent across different empirical strategies. Allowing markups to vary—either statically or dynamically—unveils patterns of firm behavior that deepen our understanding of how market power shapes day-to-day operational decisions and firm strategy.

These patterns emphasize the operational discipline required for low-markup firms to remain competitive and the strategic flexibility that higher-markup firms may enjoy in managing inventories.

Figure 1 presents a graphical summary of the baseline regression coefficients reported in Table 2, illustrating the effect of firm-level markup on the logarithm of inventory turnover across alternative model specifications. The plot confirms the consistently negative and statistically significant relationship, with all estimated coefficients lying below zero. Variation in magnitude across models reflects differences in included fixed effects, with model (2) showing the largest negative effect and model (1) the smallest. The tight confidence intervals (error bars) underscore the precision of these estimates and the robustness of the inverse association between markup and operational efficiency. This visual evidence reinforces the conclusion that higher market power corresponds to lower inventory turnover, consistent with the hypothesis of increased operational slack among firms exercising pricing power.

5 Mechanism: The Moderating Role of Governance

If the negative relationship between markups and inventory efficiency reflects managerial slack, then we should expect it to be more pronounced in firms with weaker governance structures. In such firms, reduced oversight allows market power to translate more directly into operational inefficiency, providing a potential mechanism behind our results.

To further explore the channels through which market power influences operational efficiency, we examine the role of firm-level governance as a potential moderator.

Specifically, we estimate linear interaction models of the form:

$$\ln(\text{Inventory Turnover}_{it}) = \alpha_i + \delta_t + \beta_1 \ln(\text{Markup}_{it}) + \beta_2 \left(\ln(\text{Markup}_{it}) \times \text{Gov}_{it}\right) + \epsilon_{it}, \tag{5}$$

where α_i and δ_t denote firm and year fixed effects, respectively, controlling for unobserved heterogeneity and time-varying common shocks. The variable Gov_{it} captures salient governance characteristics for firm i in year t.

Governance is operationalized through several dimensions: (i) *Board structure measures*, such as the fraction of directors appointed after the CEO's tenure, the tenure-weighted fraction of directors appointed post-CEO, or the share of independent directors named after CEO appointment; (ii) a *CEO ownership measure*, specifically, the CEO's percentage of equity ownership; and (iii) *CEO incentive measures*, including the CEO's delta (wealth sensitivity to stock price changes) and vega (wealth sensitivity to return volatility).

In this framework, β_1 represents the baseline effect of market power on inventory turnover, while β_2 quantifies the extent to which governance moderates this effect. A statistically significant interaction term (β_2) provides evidence that the relationship between market power and operational efficiency is contingent on the quality or structure of firm governance. Stronger governance—e.g., greater independent oversight or closer alignment of CEO interests with those of shareholders—may mitigate or magnify the operational slack associated with increased market power.

By modeling these interactions, we offer a rigorous assessment of how internal governance frameworks condition the impact of market power on firms' operational choices. This analysis deepens our understanding of the micro-level mechanisms linking pricing power, corporate control, and operational discipline, and highlights governance as a cen-

tral factor in shaping firm strategy under varying competitive environments.

5.0.1 *Co-option*

Table 3 investigates whether the composition of the board—specifically, the degree of board co-option—moderates the relationship between firm market power and operational efficiency. Each model includes an interaction between $\log(\text{Markup})$ and a different measure of board co-option, such as the fraction or tenure-weighted share of directors installed after the current CEO's appointment.

Across all specifications, the coefficient on $\log(\text{Markup})$ remains large, negative, and statistically significant, reaffirming that firms with greater market power consistently exhibit lower inventory turnover. This result suggests that, regardless of board composition, firms with pricing power tend to operate with more inventory slack, consistent with the view that market power diminishes the pressure to optimize operational processes in response to competitive forces.

However, the interaction terms between markups and the various board co-option measures are uniformly small in magnitude and statistically insignificant. Economically, this indicates that changes in board co-option do not materially alter the disciplining effect—or lack thereof—of the board on operational slack induced by market power. In other words, whether a board is more or less aligned with or independent from the CEO appears insufficient on its own to mitigate the relaxation of operational discipline that accompanies enhanced market power. This result resonates with recent literature questioning the efficacy of surface-level board changes as a governance remedy for entrenched managerial behaviors in high–market power firms Elsayed (2016); Breivik (2019); Adams and Ferreira (2009); Larcker et al. (2005).

Overall, these findings confirm that market power is a robust predictor of operational slack, as proxied by lower inventory turnover, and they suggest that commonly used

board co-option measures offer limited efficacy in curbing this effect. Thus, efforts to enhance operational discipline in high–market power firms may require deeper reforms than adjustments to board appointment timing or surface-level independence.

Table 3: Effect of Markup on Inventory Turnover Interacted with Co-option Measures

	(1)	(2)	(3)	(4)
Log(Markup)	-0.842***	-0.842***	-0.844***	-0.855***
	(0.071)	(0.070)	(0.069)	(0.067)
Log(Markup) × Fraction of directors appointed after CEO took office	-0.020			
	(0.041)			
Log(Markup) × Fraction of independent directors appointed after CEO took office		-0.024		
		(0.050)		
Log(Markup) × Tenure-weighted fraction of directors appointed after CEO took office			-0.022	
			(0.044)	
Constant	2.894***	2.894***	2.894***	2.896***
	(0.073)	(0.073)	(0.073)	(0.073)
R-squared	0.403	0.403	0.403	0.403
Observations	18,172	18,171	18,172	18,171

Notes: This table reports the effect of firm-level market power, measured using the log of markups, on the log of inventory turnover ratio. The interaction terms capture whether this relationship varies with different board co-option measures, including the fraction and tenure-weighted share of directors appointed after the current CEO took office. All regressions include sector and year fixed effects. Standard errors (shown in parentheses) are clustered at the firm level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

5.0.2 *CEO- ownership*

Table 4 examines how the relationship between market power and operational efficiency varies with CEO ownership concentration. The results reveal that the coefficient on log(Markup) is negative and highly statistically significant, indicating that firms with greater pricing power tend to hold inventory longer and thus operate with more slack. This supports the view that market dominance reduces the competitive pressure to run lean operations, potentially leading to diminished inventory discipline.

The interaction term between log(Markup) and CEO ownership percentage is likewise negative and statistically significant at the 5% level, revealing a meaningful economic pattern: as the CEO's equity stake rises, the negative effect of market power on

inventory turnover becomes even more pronounced. In practical terms, when CEOs have more concentrated ownership, they possess greater discretion and face weaker external monitoring. This heightened managerial latitude in high–market power environments appears to intensify operational slack, as dominant CEOs may prioritize objectives aside from efficiency—such as personal utility maximization or risk aversion—over aggressive inventory management.

This interaction finding resonates with classic agency theory, which posits that concentrated managerial control can amplify agency problems, especially when firms enjoy substantial market power and thus face limited external discipline Denis et al. (1997); Qu and Zhang (n.d.). The model has solid explanatory power within the context of corporate governance research, reflecting that the included governance variables and interactions collectively account for a substantial portion of variation in firms' inventory management behavior.

Table 4: Effect of Markup on Inventory Turnover Ratio with CEO Ownership Interaction

	(1) Log(Inventory Turnover Ratio)
Log(Markup)	-0.871***
	(0.066)
Log(Markup) × CEO ownership (%)	-0.003**
	(0.001)
Constant	2.928***
	(0.078)
R-squared	0.437
Observations	81,284

Notes: This table reports the effect of firm-level market power, measured using the log of firm markups, on the log of inventory turnover ratio. The specification includes an interaction term with CEO ownership percentage to assess whether markups affect inventory behavior differently depending on ownership incentives. The negative and statistically significant interaction coefficient suggests that higher CEO ownership amplifies the negative effect of markups on inventory turnover. Standard errors (in parentheses) are clustered at the firm level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

Overall, these results extend and enrich the baseline findings: while market power

generally reduces operational efficiency, its impact is amplified in settings where CEOs wield greater ownership and, by extension, control. This highlights the importance of both market environment and internal governance structures in shaping the operational consequences of market power.

5.0.3 *CEO-incentive measures*

Table 5 reports the interactive effects of CEO risk incentives—measured by Delta and Vega—on the relationship between firm-level market power, proxied by the natural logarithm of markup, and operational efficiency, as captured by the logarithm of inventory turnover ratio. The coefficient on $\log(\text{Markup})$ is negative and highly statistically significant across both specifications, confirming that greater market power systematically corresponds to slower inventory turnover, reflecting increased operational slack.

The interaction terms between $\log(\text{Markup})$ and the logarithm of CEO Delta (Column 1) and the logarithm of CEO Vega (Column 2) are both positive and statistically significant, although with differing magnitudes. Delta quantifies the sensitivity of CEO wealth to changes in the firm's stock price, aligning managerial incentives with shareholder value by exposing CEOs to the upside and downside of firm performance. Vega, on the other hand, measures CEO wealth sensitivity to stock return volatility, thus capturing incentives for risk-taking behavior.

A positive interaction coefficient indicates that higher CEO sensitivity weakens the negative impact of market power on inventory turnover. Economically, this suggests that when CEOs have stronger incentives linked to stock price appreciation (high Delta) or risk-taking (high Vega), they are more likely to curtail operational slack despite the presence of market power. These findings resonate with the broader literature on managerial incentives, which posits that equity-based compensation can align CEO actions closer to shareholder interests and mitigate inefficiencies arising from market dominance (Guay,

1999; Hall and Liebman, 1998).

Table 5: Effects of Markup on Inventory Turnover Interacted with CEO Sensitivity Measures

	(1)	(2)
	Log(Inventory Turnover Ratio)	
Log(Markup)	-0.986***	-0.917***
	(0.057)	(0.052)
Log(Markup) × Log(Delta)	0.026***	
	(0.006)	
Log(Markup) × Log(Vega)		0.016**
		(0.007)
Constant	2.937***	2.926***
	(0.050)	(0.049)
R-squared	0.392	0.391
Observations	145,493	152,555

Notes: The dependent variable is the log of the inventory turnover ratio, defined as cost of goods sold divided by average inventory for each firm-year. The main explanatory variable is the log of firm-level markups. Columns (1) and (2) include interaction terms between log markups and two different CEO sensitivity measures; log(Delta) captures the sensitivity of CEO wealth to stock price changes, while log(Vega) reflects sensitivity to stock price volatility. All regressions include firm and year fixed effects. Standard errors (reported in parentheses) are clustered at the industry level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

These findings reveal the critical importance of CEO compensation incentives in shaping firms' operational behavior in the presence of market power. When CEOs have heightened sensitivity of their wealth to firm stock price changes (Delta) and to stock return volatility (Vega), they tend to exercise greater discipline over inventory management, thereby mitigating the slack typically associated with increased market power. This evidence underscores how carefully structured equity-based incentives function as an effective internal governance mechanism, aligning managerial actions with shareholder interests even in less competitive environments. Ultimately, these results deepen our understanding of the interplay between managerial incentives, market power, and operational efficiency, highlighting the complex dynamics that govern firm performance and governance.

6 Concluding Remarks

Existing work highlights how markups distort resource allocation across sectors and suppress aggregate productivity (Acemoglu et al., 2024). We add a complementary dimension: market power can also distort productivity within firms, by weakening the link between managerial effort and performance. This micro-level inefficiency channel helps explain why aggregate productivity has slowed even as firms enjoy record profits and rising markups. However, the implications of rising markups extend far beyond pricing behavior.

Our findings shed new light on the micro-foundations of rising markups in the U.S. economy by uncovering a robust negative relationship between markups and operational efficiency, as proxied by inventory turnover. This relationship is strongest among firms with moderate markups, where reduced competitive pressure appears to erode managerial discipline and induce slack. However, the relationship attenuates at the upper end of the markup distribution — a pattern consistent with the rise of superstar firms that simultaneously achieve high pricing power and operational excellence. These heterogeneous effects suggest that while some high-markup firms are reaping rents without efficiency losses, others are engaging in value-destroying slack, with implications for productivity and capital misallocation. Our results caution against interpreting aggregate trends in markups as unambiguously benign or efficiency-enhancing and underscore the need for policy frameworks that distinguish between market power grounded in superior capabilities versus that which enables internal inefficiency. More broadly, the operational channel we identify adds a new dimension to the welfare debate on rising market power, linking pricing behavior not only to market structure, but also to the quality of firm-level execution.

Complementing these core insights, our governance analyses reveal critical conditional dynamics. Firms with concentrated CEO ownership experience an amplified nega-

tive impact of markups on operational efficiency, signaling that weaker governance structures can exacerbate managerial slack in the presence of market power. Conversely, better-aligned managerial incentives, as proxied by greater CEO equity sensitivity, partially mitigate these adverse operational consequences, highlighting governance and incentive design as pivotal levers in shaping firm efficiency. Interestingly, while we observe strong effects linked to CEO ownership and incentives, board co-option measures do not significantly moderate the core markup–efficiency relationship, illustrating the complexity of internal governance mechanisms.We interpret these findings through the lens of both X-inefficiency theory and moral hazard in organizations. In environments with limited competitive pressure, managers may rationally exert less costly effort toward operational optimization, particularly when governance oversight is weak. Market power, in this context, reduces the marginal value of tight execution. This behavioral channel complements traditional concerns about pricing distortions by introducing a new type of productive inefficiency that occurs within the firm.

The operational inefficiency channel we uncover enriches the existing literature by revealing that the real costs of market power extend beyond distorted pricing and allocation to tangible declines in firm-level operational performance. This suggests that rising markups can mask significant heterogeneity in firm behavior and outcomes — some firms harness market power to simultaneously enhance operational discipline, while others succumb to slack that undermines productivity and may contribute to inefficient capital allocation.

These findings carry important implications for managers and policymakers alike. For corporate leaders, the results highlight that operational slack may emerge as an unintended consequence of pricing power, creating hidden costs that erode long-term competitiveness. High-markup firms should be particularly vigilant about maintaining operational discipline, as inefficiencies can compound over time and impair sustainable per-

formance. From a policy perspective, our study supports the inclusion of operational metrics such as inventory turnover in antitrust and competition analyses. Recognizing that market power allows firms to tolerate inefficiencies, competition policies that promote a vibrant and contestable market environment could yield "double dividends" — not only through lower consumer prices but also via improved operational efficiency and productivity.

More broadly, the paper emphasizes that the welfare costs of rising market power are multifaceted. Beyond higher prices, these costs may manifest as slower innovation, weaker productivity growth, and reduced robustness against shocks such as supply chain disruptions — issues that are increasingly salient amid rising industry concentration and concerns over economic dynamism. Our research thus calls for a more nuanced understanding of market power's full effects and advocates for policy and managerial responses that address both pricing and operational dimensions of firm performance.

In sum, by linking markups to operational inefficiency and demonstrating heterogeneity driven by governance factors and firm characteristics, our study provides a richer portrait of market power's consequences. It invites managers to maintain rigorous operational discipline even amid pricing advantages and urges policymakers to broaden their evaluation metrics to capture the hidden, yet consequential, dimensions of market dominance.

References

Acemoglu, D., T. A. Hassan, and A. Tahbaz-Salehi, "The Power of Creative Destruction," *American Economic Review*, 2020, *110* (3), 691–738.

Acemoglu, Daron, David Autor, and Christina Patterson, "Bottlenecks: Sectoral imbalances and the US productivity slowdown," *NBER Macroeconomics Annual*, 2024, *38* (1), 153–207.

Adams, Renée B and Daniel Ferreira, "Women in the boardroom and their impact on governance and performance," *Journal of financial economics*, 2009, *94* (2), 291–309.

Aghion, P., C. Antonin, S. Bunel, and X. Jaravel, "Inequality and Competition: Evidence from Patent Data," *Journal of Political Economy*, 2023. Forthcoming.

Arellano, Manuel and Olympia Bover, "Another look at the instrumental variable estimation of error-components models," *Journal of econometrics*, 1995, *68* (1), 29–51.

_ **and Stephen Bond**, "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations," *The review of economic studies*, 1991, *58* (2), 277–297.

Autor, D., D. Dorn, L. F. Katz, C. Patterson, and J. Van Reenen, "The Fall of the Labor Share and the Rise of Superstar Firms," *The Quarterly Journal of Economics*, 2020, *135* (2), 645–709.

Ayamga, Timothy Azaa, "Mediating Effect of Corporate Governance on Corporate Social Responsibility, Market Power and Financial Performance Nexus," *American Journal of Industrial and Business Management*, 2024, *14* (9), 1109–1145.

Azar, José A, Steven T Berry, and Ioana Marinescu, "Estimating labor market power," Technical Report, National Bureau of Economic Research 2022.

Baqaee, D. R. and E. Farhi, "The Macroeconomic Impact of Market Power," Technical Report 27817, NBER 2020.

Bartelsman, E., J. Haltiwanger, and S. Scarpetta, "Micro Moments and Macro Misallocation," Technical Report 31299, NBER 2023.

Bils, Mark and Peter J Klenow, "Using consumer theory to test competing business cycles models," *Journal of Political Economy*, 1998, *106* (2), 233–261.

Blonigen, Bruce A and Justin R Pierce, "Evidence for the effects of mergers on market power and efficiency," Technical Report, National Bureau of Economic Research 2016.

Bloom, Nicholas, Leonardo Iacovone, Mariana Pereira-Lopez, and John Van Reenen, "Management and misallocation in Mexico," Technical Report, National Bureau of Economic Research 2022.

Blundell, Richard and Stephen Bond, "Initial conditions and moment restrictions in dynamic panel data models," *Journal of econometrics*, 1998, *87* (1), 115–143.

Boar, Corina and Virgiliu Midrigan, "Markups and inequality," *Review of Economic Studies*, 2024, p. rdae103.

Bogetoft, Peter, Lene Kroman, Aleksandrs Smilgins, and Anders Sørensen, "Innovation strategies and firm performance," *Journal of Productivity Analysis*, 2024, *62* (2), 175–196.

Bolton, Patrick and David Scharfstein, "Agency problems, financial contracting, and predation," 1988.

Bonfiglioli, Alessandra, Rosario Crinò, Gino Gancia, and Ioannis Papadakis, "Artificial intelligence and jobs: evidence from US commuting zones," *Economic Policy*, 2025, *40* (121), 145–194.

Bourgeois, L. J., "On the Measurement of Organizational Slack," *Academy of Management Review*, 1981, *6* (1), 29–39.

Breivik, Jørgen, "Retail chain affiliation and time trend effects on inventory turnover in Norwegian SMEs," *Cogent Business & Management*, 2019.

Brynjolfsson, Erik, Daniel Rock, and Chad Syverson, "Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics," Technical Report, National Bureau of Economic Research 2017.

Cachon, Gérard P and Marcelo Olivares, "Drivers of finished-goods inventory in the US automobile industry," *Management science*, 2010, *56* (1), 202–216.

Camino-Mogro, Segundo, Mary Armijos, Paúl Vera-Gilces, Natalia Bermúdez-Barrezueta, Xavier Ordeñana-Rodríguez, and Juan Dominguez, "Market power versus efficiency in the Ecuadorian bank credit market," *Journal of Applied Economics*, 2025, *28* (1), 2472588.

Chan, Wai Ho, Cheuk Kwong Fok, Liming Liu, and Lai Wei, "Retailers' Inventory Turnover and Suppliers' Investment Efficiency," *Available at SSRN 4545555*, 2023.

Chen, H., Q. Wang, and X. Zhao, "Strategic Slack in Operations: A Behavioral Perspective," *Manufacturing Service Operations Management*, 2022, *24* (4), 1970–1985.

Chen, Hong, Murray Z Frank, and Owen Q Wu, "What actually happened to the inventories of American companies between 1981 and 2000?," *Management science*, 2005, *51* (7), 1015–1031.

Chen, Xilu, Guangyu Pei, Zheng Song, and Fabrizio Zilibotti, "Tertiarization Like China," *Annual Review of Economics*, 2023, *15*, 485–512.

Clougherty, Joseph A and Bradley R Skousen, "The efficiency and market-power interpretations of the multinational enterprise: Two out of three ain't bad," *Global Strategy Journal*, 2021, *11* (3), 356–379.

Coles, Jeffrey L, Naveen D Daniel, and Lalitha Naveen, "Managerial incentives and risk-taking," *Journal of financial Economics*, 2006, *79* (2), 431–468.

Coles, Jeffrey L., Naveen D. Daniel, and Lalitha Naveen, "Co-opted Boards," *The Review of Financial Studies*, 2014, *27* (6), 1751–1796.

Coles, Jeffrey L, Naveen D Daniel, and Lalitha Naveen, "Survey of boards' monitoring and advisory roles," in "Handbook of Corporate Finance," Edward Elgar Publishing, 2024, pp. 456–478.

Core, John and Wayne Guay, "Estimating the value of employee stock option portfolios and their sensitivities to price and volatility," *Journal of Accounting research*, 2002, *40* (3), 613–630.

Crouzet, N. and J. Eberly, "Understanding Weak Investment: The Role of Market Concentration and Intangibles," *Review of Economic Studies*, 2022, *89* (4), 1923–1967.

Cyert, Richard and James March, "Behavioral theory of the firm," in "Organizational Behavior 2," Routledge, 2015, pp. 60–77.

Denis, David J, Diane K Denis, and Atulya Sarin, "Agency problems, equity ownership, and corporate diversification," *The journal of finance*, 1997, *52* (1), 135–160.

Edmond, C., "Market Power and Macroeconomic Performance," *Annual Review of Economics*, 2022, *14*, 395–423.

Edmond, Chris, Virgiliu Midrigan, and Daniel Yi Xu, "Competition, markups, and the gains from international trade," *American Economic Review*, 2015, *105* (10), 3183–3221.

Elsayed, Khaled, "Examining the role of inventory in business enterprises: is there a paradigm shift?," *International Journal of Productivity and Quality Management*, 2016, *19* (1), 51–73.

Fisher, M., "What is the Right Supply Chain for Your Product?," *Harvard Business Review*, 1997, *75* (2), 105–116.

García-Macia, D. and N. Roussanov, "Organization Capital and the Cross-Section of Returns," *Journal of Finance*, 2021, *76* (2), 841–891.

Gaur, V., M. Fisher, and A. Raman, "An Econometric Analysis of Inventory Turns and Operating Performance," *Management Science*, 2005, *51* (11), 1680–1692.

George, G., "Slack resources and the performance of privately held firms," *Academy of Management Journal*, 2005, *48* (4), 661–676.

Golan, Limor, Christine A Parlour, Uday Rajan et al., "Competition, quality and managerial slack," Technical Report, Carnegie Mellon University, Tepper School of Business 2011.

Goolsbee, Austan and Chad Syverson, "The strange and awful path of productivity in the US construction sector," Technical Report, National Bureau of Economic Research Cambridge, MA, USA 2023.

Grossman, Sanford J and Oliver D Hart, "An analysis of the principal-agent problem," in "Foundations of insurance economics: Readings in economics and finance," Springer, 1992, pp. 302–340.

Guay, Wayne R, "The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants," *Journal of financial economics*, 1999, *53* (1), 43–71.

Gutiérrez, Germán and Thomas Philippon, "The failure of free entry," Technical Report, National Bureau of Economic Research 2019.

Hall, Brian J and Jeffrey B Liebman, "Are CEOs really paid like bureaucrats?," *the quarterly journal of economics*, 1998, *113* (3), 653–691.

Hall, R. E., "New Evidence on the Markup of Prices Over Marginal Costs and the Role of Mega-Firms in the U.S. Economy," 2018, (24574).

Hendricks, Kevin B, Vinod R Singhal, and Rongrong Zhang, "The effect of operational slack, diversification, and vertical relatedness on the stock market reaction to supply chain disruptions," *Journal of operations management*, 2009, *27* (3), 233–246.

Hsieh, Chang-Tai and Peter J Klenow, "Misallocation and manufacturing TFP in China and India," *The Quarterly journal of economics*, 2009, *124* (4), 1403–1448.

Hu, Shanshan, Qing Ye, Wei Chi, and Barbara B Flynn, "Supply chain structure, inventory turnover, and financial performance: Evidence from manufacturing companies in China," *Inventory Turnover, and Financial Performance: Evidence from Manufacturing Companies in China (September 1, 2010)*, 2010.

Ichniowski, Casey, Kathryn L Shaw, and Giovanna Prennushi, "The effects of human resource management practices on productivity," 1995.

Jangili, Ramesh, *Profitability in Emerging Markets: Efficiency Or Market Power?: a Study of Indian Firms*, Indira Gandhi Institute of Development Research, 2020.

Jiao, Jinxia, ChenGuang Liu, Yan Xu, and Zirong Hao, "Effects of strategic flexibility and organizational slack on the relationship between green operational practices adoption and firm performance," *Corporate Social Responsibility and Environmental Management*, 2022, *29* (3), 561–577.

Krishna, P., "On competition and endogenous firm efficiency," *Economic Theory*, 2001, *18* (3), 753–760.

Larcker, David F, Scott A Richardson, and Al Tuna, "How important is corporate governance?," *Available at SSRN 595821*, 2005.

Lehmann, Johannes and Michael Beckmann, "Digital technologies and performance incentives: Evidence from businesses in the Swiss economy," *Swiss Journal of Economics and Statistics*, 2025, *161* (1), 1.

Leibenstein, H., "Allocative Efficiency versus "X-Efficiency"," *American Economic Review*, 1966, *56* (3), 392–415.

Li, Pengcheng, Yanbing Chen, and Xiaochuan Guo, "Digital transformation and supply chain resilience," *International Review of Economics & Finance*, 2025, *99*, 104033.

Loecker, J. De, J. Eeckhout, and G. Unger, "The Rise of Market Power and the Macroeconomic Implications," *The Quarterly Journal of Economics*, 2020, *135* (2), 561–644.

Loecker, Jan De, Jan Eeckhout, and Gabriel Unger, "The rise of market power and the macroeconomic implications," *The Quarterly journal of economics*, 2020, *135* (2), 561–644.

Martin, S., "Endogenous firm efficiency in a Cournot principal-agent model," *Journal of Economic Theory*, 1993, *59* (2), 445–450.

Metcalfe, Robert D, Alexandre B Sollaci, and Chad Syverson, "Managers and productivity in retail," Technical Report, National Bureau of Economic Research 2023.

Miller, Nathan H, "Rising Market Power: Evidence from Industry Studies," *Network L. Rev.*, 2025, p. 21.

Modi, Sachin B and Saurabh Mishra, "What drives financial performance–resource efficiency or resource slack?: Evidence from US based manufacturing firms from 1991 to 2006," *Journal of Operations Management*, 2011, *29* (3), 254–273.

Nickell, Stephen, "Biases in dynamic models with fixed effects," *Econometrica: Journal of the econometric society*, 1981, pp. 1417–1426.

Onah, Ewogu and Prof Okwo, "EFFECT OF ASSET TURNOVER ON OPERATING PROFITABILITY OF CONSUMER GOODS COMPANIES IN NIGERIA," *International Journal of Education and Social Science Research*, 01 2024, *07*, 88–103.

Qu, Zihao and Guang Zhang, "CEO Ownership, Options and Stock Market Performance," *Available at SSRN 4925375.*

Ridder, Maarten De, Basile Grassi, and Giovanni Morzenti, "The hitchhiker's guide to markup estimation: assessing estimates from financial data," *Work. Pap., London Sch. Econ./Bocconi Univ./Analysis Group, UK/Milan, Italy/Paris, France*, 2024.

Rogerson, Richard and Diego Restuccia, "Policy distortions and aggregate productivity with heterogeneous plants," in "2004 Meeting Papers" number 69 Society for Economic Dynamics 2004.

Syverson, C., "Macroeconomics and Market Power: The Need for a New View," *Journal of Economic Perspectives*, 2019, *33* (3), 23–43.

Teece, David J, *Dynamic capabilities and strategic management: Organizing for innovation and growth*, Oxford University Press, 2009.

Thwaites, G, P Smietanka, P Bunn, P Mizen, and N Bloom, "The Impact of Covid-19 on Productivity," 2021.

Willig, Robert D, "Corporate governance and market structure," in "Economic policy in theory and practice," Springer, 1987, pp. 481–503.

Zhang, Lu-Yao, Xing-Can Zhang, and Seong-Jin Choi, "Optimizing slack resource allocation: An economic approach to sustainable competitive advantage," *Sage Open*, 2025, *15* (1), 21582440251313587.

A Appendix

A.1 Figures

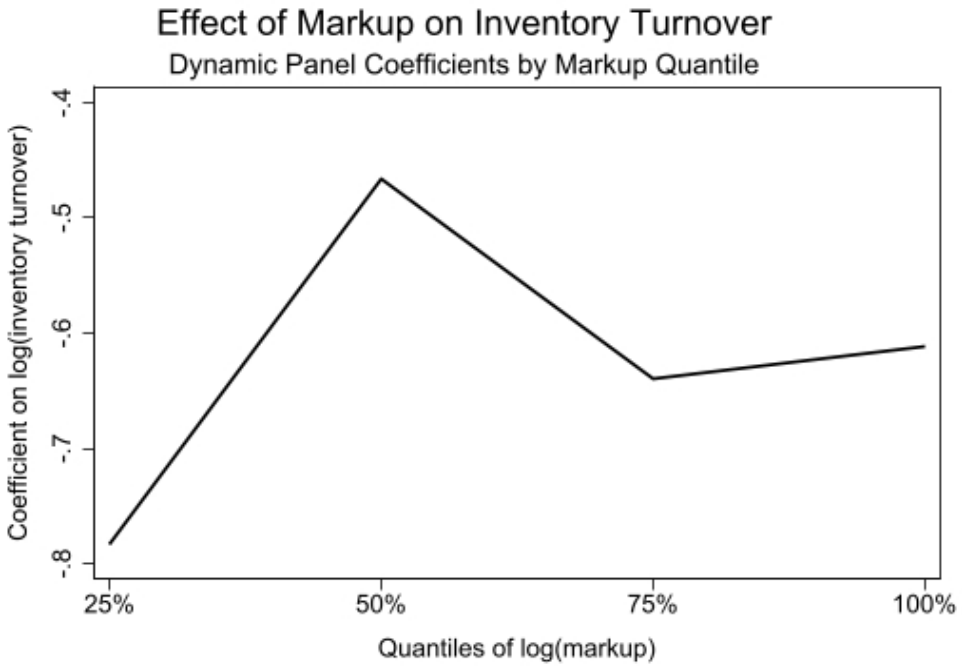

Figure A.1: Dynamic Panel Regression Coefficients by Markup Quantile

Notes: This figure shows the estimated coefficients from a dynamic panel regression of log inventory turnover on log markups across different markup quantiles. The y-axis plots the coefficient on log(markup), and the x-axis divides firms into quartiles based on their markup levels. A more negative value indicates a stronger negative relationship between markups and inventory turnover. All specifications include firm and year fixed effects, and standard errors are clustered at the firm level.

A.2 Tables

Table A.1: Summary Statistics

Variable	Mean	SD	Min	Max	Count
COGS	1497.108	8229.688	-13177.800	428211.147	368336
Static Markup	1.675	1.219	0.010	24.919	254725
Rolling Markup	1.682	1.191	-6.284	39.620	254717
Inventory	331.042	5393.575	-17.031	547151.296	358507
Inventory Turnover Ratio	36.296	3256.132	-664.625	1647349.375	265883
Amount Payables	1522.483	25569.887	-4.307	2134782.055	345055
Log(Static Markup)	0.927	0.300	0.010	3.255	254725
Log(Rolling Markup)	0.931	0.299	0.002	3.704	254709
Log(Inventory Turnover)	2.107	1.116	0.001	14.315	265880
Log(Amount Payables)	3.061	2.344	0.000	14.574	345054
Rolling Markup (Std)	0.000	1.000	-6.690	31.859	254717
Static Markup (Std)	-0.000	1.000	-1.366	19.065	254725
Frac. Dir. After CEO	0.475	0.315	0.000	1.000	28638
Frac. Indep. Dir. After CEO	0.369	0.261	0.000	1.000	28637
Tenure-Weighted Frac. Dir. After CEO	0.308	0.323	0.000	1.000	28638
shrown_excl_opts_pct	1.300	4.698	-1.225	278.000	147094
Wealth sensitivity to stock price changes (1%)	345.342	5328.339	-10.764	709829.705	224355
Wealth Sensitivity to stock volatility	48.925	162.537	0.000	24152.330	234281
Number of Suppliers	1.851	4.477	0.000	174.000	43504

Notes: This table presents summary statistics for key firm-level variables used in the analysis, including cost measures, markups, inventory dynamics, payment structures, corporate governance indicators, and CEO compensation incentives. Variables are expressed in levels, logarithmic, and standardized forms. Monetary variables are in consistent units. 'Count' indicates the number of non-missing observations for each variable.

Table A.4: Dynamic Panel Model Coefficients by Markup Quartile

	(1)	(2)	(3)	(4)
	Log(Inventory Turnover Ratio)			
Lagged Log(Inventory Turnover Ratio)	0.038***	0.036**	0.060***	0.109***
	(0.013)	(0.016)	(0.013)	(0.011)
Log(Markup)	-0.783***	-0.466***	-0.639***	-0.612***
	(0.041)	(0.051)	(0.037)	(0.024)
Constant	2.758***	2.239***	2.341***	2.341***
	(0.042)	(0.050)	(0.042)	(0.043)
Observations	42,057	46,148	41,822	33,948

Notes: This table reports coefficient estimates from dynamic panel regressions of the log of the inventory turnover ratio on lagged inventory turnover and log(markup), separately by markup quartile. Each column corresponds to a different quartile of the markup distribution, with Column (1) representing the lowest quartile and Column (4) the highest.
Standard errors are in parentheses. All regressions are estimated using a dynamic panel estimator. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: RIF Regression Results across Accrual Quantiles

Quantile of Markup (Rolling)	**10%**	**25%**	**50%**	**75%**	**90%**
Low Accruals					
log(Inventory turnover)	-0.0338***	-0.0418***	-0.0486***	-0.0583***	-0.0537***
	(0.0068)	(0.0079)	(0.0089)	(0.0088)	(0.0088)
High Accruals					
log(Inventory turnover)	-0.0926***	-0.0231***	-0.0054	-0.0075***	-0.0074***
	(0.0187)	(0.0076)	(0.0048)	(0.0025)	(0.0021)
Observations range from 58,482 to 139,761 across quantiles					

Notes: Standard errors are reported in parentheses. Sector fixed effects are absorbed in all regressions. *** indicates $p < 0.01$, ** indicates $p < 0.05$, and * indicates $p < 0.10$. The dependent variable is the log of RIF-Markup, and the regressions are stratified by low and high accrual groups.

Table A.6: Regression Results by Board Co-option Quartiles

	(1)	(2)
	Log(Inventory-Turnover Ratio)	
Log(Markup)	-0.955***	-0.520*
	(0.099)	(0.271)
Log(Markup) × Fraction of directors appointed after CEO	0.067	-0.376
	(0.241)	(0.266)
Constant	2.971***	2.932***
	(0.095)	(0.116)
R-squared	0.407	0.412
Observations	4,572	4,131

Notes: This table reports regression estimates of the log of inventory-turnover ratio on firm-level markups and their interaction with a board co-option measure. The co-option variable is defined as the fraction of directors appointed after the CEO. Column (1) shows results for firms in the bottom quartile (lowest 25%) of the co-option distribution, while Column (2) shows results for firms in the top quartile (highest 25%). All regressions include firm-level controls (not reported). Standard errors are clustered at the industry level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.

Table A.7: Markup and Inventory Turnover – Independent Co-option Quartiles

	(1)	(2)
	Log(Inventory-Turnover Ratio)	
Log(Markup)	-0.883***	-1.306***
	(0.096)	(0.232)
Log(Markup) × Co-option	-0.190	0.679**
	(0.287)	(0.267)
Constant	2.918***	2.882***
	(0.092)	(0.108)
R-squared	0.403	0.462
Observations	4,783	4,187

Notes: The dependent variable is the natural logarithm of the inventory turnover ratio (defined as cost of goods sold divided by average inventory). The main independent variable is the natural logarithm of firm-level markups. The co-option variable is defined as the fraction of independent directors on the board who were appointed after the current CEO took office. The interaction term captures how the effect of markups on inventory turnover varies with the level of independent board co-option. Column (1) reports results for firms in the lowest quartile of the co-option distribution, and Column (2) reports results for firms in the highest quartile. Standard errors (in parentheses) are clustered at the firm level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Effect of Markup on Inventory Turnover by Top and Bottom Quartiles of tenure-weighted Fraction of Directors Appointed After CEO Took Office

	(1)	(2)
	Log(Inventory Turnover Ratio)	
Log(Markup)	-0.996***	-0.755***
	(0.101)	(0.146)
Log(Markup) * Tenure-Weighted fraction of directors	1.253	-0.114
	(1.296)	(0.119)
Constant	2.998***	2.919***
	(0.095)	(0.115)
R-squared	0.408	0.427
Observations	4609	4445

Notes: The dependent variable is the natural logarithm of the inventory turnover ratio, representing operational efficiency. The key independent variables include the natural logarithm of firm markup and its interaction with the tenure-weighted fraction of directors appointed after the CEO took office (twfracdirafter). Column (1) reports results for firms in the bottom quartile, and Column (2) for firms in the top quartile of twfracdirafter. Standard errors are shown in parentheses. Significance levels are indicated by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$. Fixed effects and additional controls are included but omitted here for brevity.

Table A.9: Effect of Markup and stock price sensitivity (delta) on Inventory Turnover by Ownership Quartiles

	(1)	(2)
	Log(Inventory Turnover Ratio)	
Log(Markup)	-0.897***	-0.874***
	(0.077)	(0.122)
Log(Markup) $\times$ Log(Delta)	0.026*	0.000
	(0.014)	(0.011)
Constant	2.820***	2.992***
	(0.076)	(0.105)
R-squared	0.452	0.419
Observations	19183	22744

Notes: The dependent variable is the log of inventory turnover ratio. The main independent variable is the log of firm markup. Columns (1) and (2) report results for firms in the bottom and top 25% stock price sensitivity, respectively. The interaction term shows how CEO ownership modifies the markup effect. Negative markup coefficients indicate higher markups reduce operational efficiency. Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: Effect of Markup and CEO Vega on Inventory Turnover by Vega Quartiles

	(1)	(2)
	Log(Inventory Turnover)	
Log(Markup)	-0.895***	-0.944***
	(0.080)	(0.127)
Log(Markup) × Vega	-0.059*	0.014
	(0.035)	(0.014)
Constant	2.935***	2.976***
	(0.087)	(0.107)
R-squared	0.406	0.426
Observations	32 110	38 563

Notes: The dependent variable is the log of inventory turnover. Columns (1) and (2) report results for firms in the bottom and top 25% of the CEO Vega distribution, respectively. Vega captures the sensitivity of CEO wealth to stock-price volatility. The interaction term (*Log(Markup) × Vega*) shows how CEO Vega modifies the effect of markups on inventory turnover. All regressions include sector and year fixed effects. Standard errors are clustered at the industry level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Effect of Markup on Inventory Turnover with Supplier Interaction

	Log(Inventory Turnover)
	(1)
Log(Markup)	-0.815***
	(0.075)
Log(Markup) × Log(Number of Suppliers)	0.022
	(0.020)
Constant	2.907***
	(0.081)
R-squared	0.389
Observations	23,328

Notes: This table reports the relationship between firm-level markups and inventory turnover and includes an interaction with the log of the number of suppliers. A positive interaction coefficient would suggest that firms with broader supplier networks are better able to offset the negative effect of higher markups on inventory turnover. Standard errors are reported in parentheses and are clustered at the firm level. * indicates $p < 0.10$, ** indicates $p < 0.05$, and *** indicates $p < 0.01$.